

REMARKS

The Office raises an objection concerning wording in the Abstract. The abstract presently is amended in a manner that is believed to fully respond to this matter.

Claim 3 is rejected under 35 U.S.C. Section 112, second paragraph because claim 3 does not disclose how long it should take to heat the adhesive or what the adhesive properties comprise. Claim 3 is amended to recite that the heat responsive coupling member is a hot melt adhesive that is bonded to the embolic coil and releases therefrom upon being heated. It is respectfully asserted that one of ordinary skill in the art would understand the adhesive properties of a hot melt adhesive and the fact that hot melt adhesives will reduce in yield strength when heated. Applicants respectfully observe that claim 3 is rendered more definite by specifying that such heating is to about 65°C than if no temperature were specified or if no yield strength threshold were specified. Applicants respectfully request reconsideration and withdrawal of this Section 112 rejection of claim 3, particularly in view of the present amendments to this claim.

Claims 1-4 are rejected under 35 U.S.C. Section 103 from Saadat, et al. WO/97/01368 in view of Lee et al. U.S. Patent No. 5,911,737.

Claim 1 is presently amended to specify that the heat responsive coupling member couples to the heating element by an adhesive bond and comprises as biocompatible adhesive that exhibits the characteristic of releasing the embolic coil when the adhesive is heated. Support for this adhesive bond and biocompatible adhesive subject matter is found, for example, at line 14-18 of page 11 and at line 9 of page 10.

Claims 3-7 recite that this adhesive having this characteristic is a hot melt adhesive. Support for the coupling member comprising a hot melt adhesive and its characteristic of releasing are found, for example, at lines 10-12 of page 10 and other passages.

Newly submitted claim 5 provides further properties about the hot melt adhesive, namely that it softens when heated so it may be stretched. Support therefor is found, for example, at lines 9-10 of page 10.

Claim 6 specifies that the hot melt adhesive has a lower yield strength after heating than before heating, support

therefor being found, for example, from line 23 of page 10 to line 12 of page 11.

Claim 7 specifies that the hot melt adhesive softens so that it may be stretched when heated to at least about 63°C, support therefor being found, for example, at lines 10-15 of page 10, together with original claim 3.

Claim 8 specifies that the heat responsive coupling member breaks when the delivery member is retracted with respect to the positioning member, support therefor being found, for example, at lines 1-2 of page 11 and in Figs. 4 and 5.

This disclosure also supports new claim 9, and lines 12-18 of page 11 support new claim 9, which specifies that the embolic coil release comprises disengaging the heating element from the embolic coil by breaking the adhesive bond.

Concerning Saadat, the Office acknowledges this patent publication does not teach a non-metallic polymer heat responsive coupling member coupled to a heating element. Saadat teaches that coupling is accomplished by a shape memory alloy which moves between a first configuration and a second configuration depending upon temperature. Applicants further observe that Saadat does not teach or disclose a non-metallic polymer heat responsive coupling member that couples a heating

element to an embolic coil by an adhesive bond or that such a responsive coupling member comprises a biocompatible adhesive, all as specified in present claim 1. The teaching of Saadat also is deficient with a respect to present dependent claims of this application.

Lee is cited for teaching a vascular occlusion coil deployment system that incorporates a polymer heat responsive coupling member. The Office takes the position that this heat responsive coupling member is "adhesively bonded" to the embolic coil. It is respectfully believed that the definition of adhesive that is presented in the Office Action is not consistent with the presently claimed invention. The dictionary definition presented by the Office, in the context of the teaching of Lee, does not lead to a conclusion that Lee discloses an adhesive bond with a biocompatible adhesive, as specified in present claim 1.

To further illustrate this, applicants attach a copy from Merriam Webster's Collegiate Dictionary, Tenth Edition, wherein the noun form of "adhesive" is that of a glue or cement substance. Also attached is an excerpt from the American Heritage Dictionary, Second College Edition, which provides substantially the same definition for the noun form of adhesive,

while providing an adjective form of adhesive that does not comport with the teachings of Lee. This latter definition is "tending to adhere; sticky." Furthermore, a print-out from an on-line dictionary in response to a query for "adhesive" is enclosed. The first page of this print-out enclosure gives a definition of the adjective form of adhesive as "having the property of adhering; gluey, gooey, gummy, sticky, tacky." Similar definitions are found on page 3 of this print-out enclosure, including: "an adhesive is a compound that adheres or bonds two items together."

Rather than teaching a biocompatible adhesive that provides an adhesive bond to couple components together, Lee would have taught one of ordinary skill in the art to provide a tubing (10) made of a shape memory polymer that undergoes a phase transformation at a specified temperature. The teaching of Lee is to elevate such a tubing above this phase transformation temperature so that it will soften and reshape to move from a shape such as shown in Fig. 1B (a cylinder) to a shape such as that shown in Fig. 1C, a shape conforming to ball (12) of a coil (11).

From the above, it is evident that Lee does not remove the deficiencies of Saadat in order to arrive at the invention

specified in presently amended claim 1. Lee does not teach one of ordinary skill in the art to provide an adhesive bond between a heating element and the coil of Lee or Saadat. Nor does Lee disclose a biocompatible adhesive. Nor does Lee disclose an arrangement that releases an adhesive bond and the embolic coil.

Furthermore, Lee does not disclose subject matter of current dependent claims 2-9. For example, Lee does not teach a hot melt adhesive (claims 3-7) or an adhesive that may be stretched when heated in order to release the adhesive bond (claim 5), or movement between a delivery member and a positioning member that breaks an adhesive bond (claims 8 and 9).

From the above, applicants respectfully observe that, even if it had been obvious to combine Saadat with Lee, the invention as specified in applicants' claims would not have been arrived at.

Claims 1-4 are rejected under the judicially created doctrine of obviousness-type double patenting from claims 1, 5, 7 and 28 of U.S. Patent No. 6,277,126. Also, claims 1-4 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting from claims 1-13 of co-pending application No. 10/774,833. Applicants enclose two Terminal

Disclaimers which are understood to fully obviate these double-patenting rejections.

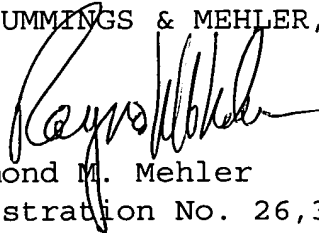
It is respectfully understood that submission of these Terminal Disclaimers overcomes these double-patenting rejections. This submission is made without admitting the propriety of the rejection and is done in order to serve the statutory function of removing the double-patenting rejections, and this action raises neither a presumption nor an estoppel with respect to the merits of the double-patenting rejections.

Reconsideration and withdrawal of the Section 112, Section 103 and double-patenting rejections are respectfully requested, as is the allowance of the present application.

Favorable consideration and allowance are respectfully requested.

Respectfully submitted,

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A handwritten signature in black ink, appearing to read 'Raymond M. Mehler', is written over the printed name and registration number.

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